HIDDEN
AFTERSHOCKS

An Assessment of the Mental Health and Psychosocial Status and Needs of Earthquake-Affected Communities in Rasuwa, Nuwakot, and Makwanpur Districts

Conducted by

TPO Nepal
PEACE OF MIND

With the support of

American Red Cross

Spanish Red Cross

International Federation
of Red Cross and Red Crescent Societies

In collaboration with

Nepal Red Cross Society

This assessment was conducted by Transcultural Psychosocial Organization Nepal (TPO Nepal) for the American Red Cross, in collaboration with the Nepal Red Cross Society and with input from the Spanish Red Cross.

Research conducted by
Transcultural Psychosocial Organization (TPO) Nepal

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Acronyms

AUDIT	Alcohol Use Disorders Identification Test
CBS	Central Bureau of Statistics
HESPER	Humanitarian Emergency Settings Perceived Needs Scale
HSCL-25	Hopkins Symptom Checklist – 25
INGO	International Non-Governmental Organization
IASC	Inter-Agency Standing Committee
mhGAP-HIG	Mental Health Gap Action Program – Humanitarian Intervention Guide
MHPSS	Mental Health and Psychosocial Support
NGO	Non-Governmental Organization
NRCS	Nepal Red Cross Society
PCL-C	Post-traumatic Stress Disorder Checklist – Civilian Version
PTSD	Post-traumatic Stress Disorder
TPO Nepal	Transcultural Psychosocial Organization Nepal
UNHCR	United Nations High Commissioner for Refugees
VDC	Village Development Committee
WHO	World Health Organization

Acknowledgements

Executive Summary

This report presents the results of an assessment of the psychosocial and mental health status and needs of communities in Rasuwa, Nuwakot, and Makwanpur districts of Nepal. The assessment took place between November 2016 and January 2017, approximately 18 months after the 2015 Nepal earthquake, and was conducted by Transcultural Psychosocial Organization Nepal (TPO Nepal) with support from the Nepal Delegation of the American Red Cross, the Nepal Red Cross Society, and other Red Cross consortium partners. The aim of this assessment was to evaluate the long-term psychosocial and mental health needs of the affected population in order to develop appropriate interventions to address those needs. This assessment used a mixed method approach including both quantitative and qualitative techniques. The assessment comprised of 510 household surveys, 30 key informant interviews, and 12 focus group discussions.

The assessment followed Inter-Agency Standing Committee (IASC Nepali version) guidelines, as well as good practice principles for assessments outlined by the World Health Organization and the United Nations High Commissioner for Refugees (WHO/UNHCR, 2012).

Key Findings

Key quantitative findings

- Most respondents (73.2%) from earthquake-affected communities reported income/livelihood as their most pressing need, followed by shelter (63.5%), and support to cope with distress/tension (61.0%).

- The most commonly reported mental health and psychosocial problems were depression symptoms (39.4%), anxiety symptoms (38.4%), alcohol use problems (25.5%), and suicidal thoughts (21.7%).

- Reports of post-traumatic stress symptoms were relatively lower (16.3%) than other mental health problems.

- Symptom of mental health problems were relatively higher among women, individuals who were widowed, separated or divorced from their partners, and members of minority ethnic groups including Chepang, Magar, Newar, and Tharu.

- Members of households that had previously been identified by the Red Cross program as "most vulnerable" reported higher rates of mental health and psychosocial problems.

Key qualitative findings

- Fear, worry, insomnia, fainting attacks, anxiety, depression, and suicidal thoughts were common mental health and psychosocial problems reported in all assessment districts.

- Children, women, and the elderly were more at risk of having mental health and psychosocial problems.

- Gathering together in public places, participating in cooperatives, helping one another, religious group practices, engaging in agricultural work, listening to music, watching TV, practicing yoga, reading books, and talking about problems with trusted friends and family were common positive coping mechanisms.

- However, more negative coping strategies such as gambling and smoking cigarettes were present, and alcohol intake was reported to be on the rise following the earthquake.

- Traditional healers and religious leaders were commonly reported informal sources of support while health posts and psychosocial

counseling services provided by various organizations were the formal resources available in the communities.

Recommendations

- There is an urgent need for the government and other service providers (including the Red Cross) to coordinate to address the most immediate needs in earthquake affected communities; this assessment identified livelihoods, shelter, and support to cope with distress as the three most commonly reported needs.

- Both specialized and non-specialized mental health services should be provided immediately for populations at high risk of mental health and psychosocial problems. These include women, older people, households previously identified by a Red Cross assessment as "most vulnerable", and the Chepang community, which is a highly marginalized ethnic group with significant populations in the Red Cross earthquake recovery program areas in Makwanpur.

- Community-based service providers (including Red Cross earthquake recovery program staff and volunteers, Female Community Health Volunteers, and traditional healers) should be trained to identify symptoms of mental health problems, provide basic MHPSS services, sensitize the community to mental health problems help reduce stigma, and refer people for more advanced care when necessary.

- Mental health and psychosocial support services should be integrated into Nepal's existing government health care delivery and protection system, and must be predicated on evidence-based practices and approaches such as IASC guidelines and mhGAP. Continued lobbying and advocacy around mental health and psychosocial issues is crucial at both the center and district level.

Introduction

Background

Over 8,900 people were killed, more than 450,000 people were displaced, and around 8.5 million people were directly affected by the two massive earthquakes that occurred in Nepal on April 25th 2015 and May 12th 2015 (Kane et al., 2017). The immense human suffering experienced during large-scale natural disasters such as these earthquakes – including the deaths of loved ones, loss of homes, food and resource shortages, injury, disease, and vulnerability to human rights violations – is often followed by a wide range of mental health and psychosocial problems both during and long after the emergency.

Studies conducted in disaster settings have shown that symptoms of mental health and psychosocial problems reach their highest severity during the first year post-disaster, followed by a gradual decline in symptoms. Although research on the long-term prevalence of post-disaster mental health problems is limited, findings from published studies are significant. According to a literature review gathered from disaster settings in 29 countries, 61% of individuals experienced minimal or moderate impairment (Norris et al., 2002). Earthquake survivors in developing countries such as Mexico and China were found to have Post-traumatic Stress Disorder (PTSD) rates as high as 11%, 2 years post-disaster (Davidsonet al., 2006). Social and economic stressors and the lack of services – especially in developing countries such as Nepal– can lead to higher rates of negative long-term psychosocial consequences (Davidson et al., 2006). Collective community losses that require heavy coordination for recovery, such as the destruction of basic infrastructure and displacement, lead to longer lasting psychosocial problems for affected individuals, especially in poorly resourced settings.

A mental health and psychosocial assessment conducted four months after the 2015 Nepal earthquake reported high rates of depression (34.3%), anxiety (33.8%), suicidal ideation (10.9%) and alcohol use problems (20.4%) (Kane et al., 2017). Immediately after the Nepal earthquakes many local and international organizations provided mental health and psychosocial support to the affected communities, but over time such services have decreased in most of the affected districts.

The Inter-Agency Standing Committee (IASC) Guidelines on Mental Health and Psychosocial Support recommend engaging in strategic and evidence-based long-term planning and creation of mental health services after complex emergencies (IASC, 2007). Rather than focusing only on basic services, security, and community and family support, the IASC also recommends providing resources for specialized mental health services that continue long after an initial disaster. According to the Mental Health Gap Action Program Humanitarian Intervention Guide (mhGAP-HIG), it is necessary to assess the long-term prevalence of mental health symptoms in post-disaster communities in order to provide effective non-specialized and specialized support (WHO, 2015). Emergencies such as the Nepal earthquake, in spite of their tragic nature and adverse effects on mental health, are also opportunities to build better mental health systems for all people in need (WHO, 2013).

At the time of the assessment, the Nepal Delegation of the American Red Cross was

working in consortium with the Spanish Red Cross and the Canadian Red Cross to support *Utthan,* a three-year integrated, community-led earthquake recovery program implemented by the Nepal Red Cross Society (NRCS) in 19 village development committees (VDCs) and one municipality across three districts of Nepal. Concerns about mental health issues in program areas led the American Red Cross to contract TPO Nepal to conduct a MHPSS assessment between November 2016 and January 2017 to assess the extent of the long-term psychosocial and mental health needs of the affected population and identify appropriate interventions to address these needs.

Objective

The overall objective of the assessment was to explore the psychosocial and mental health needs of those affected by the 2015 Nepal earthquakes in Rasuwa, Nuwakot and Makwanpur districts in order to inform the development of community-based mental health and psychosocial support interventions.

Specific Objectives

1. To assess the psychosocial and mental health status and needs of families and communities in the selected districts, with special attention to the most vulnerable earthquake-affected families.

   a. To explore the current mental health and psychosocial concerns for affected populations.
   b. To identify the percentage of the population that is experiencing key psychosocial and mental health symptoms.
   c. To identify any sub-groups of the population which are more at - risk for psychosocial and mental health problems.

2. To identify the services available in the community.

   a. To identify the types of informal social support systems (religious, traditional) that are currently available to address the psychosocial and mental health needs of the affected population.
   b. To explore the formal mental health and psychosocial support services that are currently available to address current mental health and psychosocial concerns.

3. To make recommendations regarding appropriate community-based interventions to address identified needs.

   a. To recommend immediate strategies to address current mental health and psychosocial concerns.
   b. To recommend long-term strategies to sustain mental health and psychosocial support services in the affected communities.

Methods
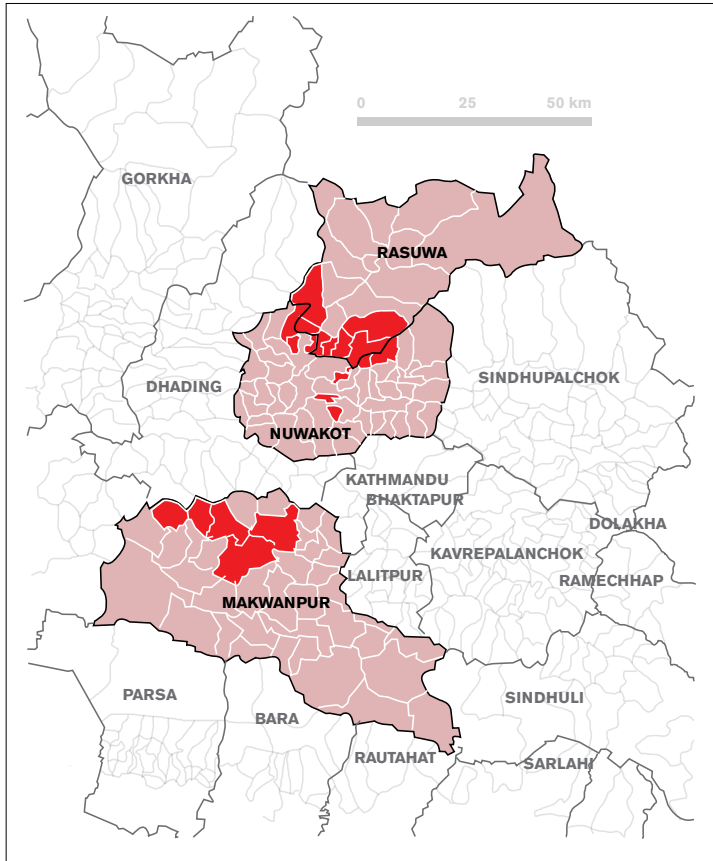
Setting

The needs assessment was conducted in three severely earthquake-affected districts: Makwanpur, Nuwakot, and Rasuwa. In each district, three VDCs or municipalities were selected for surveying based on the level of the impact of the earthquake. These areas are all part of *Utthan,* an integrated earthquake recovery program being implemented by the Nepal Red Cross Society (NRCS), with support from American, Spanish, and Canadian Red Cross partners. At the time of the assessment, ground-level service provision for some recovery activities – including shelter reconstruction and livelihoods support – had not yet begun, pending finalization of national-level policies. Psychosocial support services (PSS)comprised only a very small part of the health component of the *Utthan* program, and

NRCS capacity in this field was limited.

Makwanpur district has a population of 420,477, comprising of 206,684 males and 213,793 females. This district covers an area of 2,426 square kilometers (CBS, 2014). It includes both hilly and plain regions. Makwanpur is bordered by Kathmandu and Dhading districts to the north, Chitwan district to the west, Lalitpur, Kavre, and Sindhuli districts to the east, and Bara, Parsa, and Rautahat districts to the south. Ethnic Tamangs have the highest population (47.8%) in this district and other major castes/ethnic groups are Brahmin (14.1%), Chhetri (10.7%), and Newar (6.2%) (CBS, 2014). Hinduism (48.3%) and Buddhism (45.6%) are the two major religions in the district. Makwanpur's literacy rate is 68.5%, placing it in 34th position among Nepal's 75 districts (CBS, 2014). The assessment was conducted in Gogane and Khairang VDCs and Thaha Municipality in Makwanpur district.

Nuwakot district has a population of 277,471, comprising of 132,787 males and 144,684 females. It covers an area of 1,121 square kilometers (CBS, 2014). It is a hilly district in close proximity to Kathmandu city and shares its southern border with Kathmandu district. The major caste/ethnic groups of the district are Tamang (42.8%), Brahmin (19.0%), Chhetri (12.6%), and Newar (7.4 %). Most residents are Hindus (57.8%) or Buddhists (40.0%) (CBS, 2014). The literacy rate of the district is 60.2%, placing it in 54th position out of 75 districts nationwide (CBS, 2014). The assessment was conducted in Suryamati, Urleni, and Balche VDCs in Nuwakot district.

Rasuwa district has a population of 43,300, comprising of 21,475 males and 21,825 females. This district covers an area of 1,554 square kilometers (CBS, 2014). It has both mountainous and hilly regions, with the majority of the population living in small villages that are highly dispersed across the hill areas. It adjoins Nuwakot district to the south and its northern border is shared with China. The major caste/ethnic groups of Rasuwa district are Tamang (68.8%), Brahmin (15.8%), and Gurung (3.8%). Major religions include Buddhism (70.0%) and Hinduism (25.4%) (CBS, 2014). The literacy rate is 53.9%, ranking 67th out of the country's 75 districts (CBS, 2014). The assessment was conducted in Yarsa, Dhaibung, and Thulogaun VDCs in Rasuwa district.

Assessment design

The assessment followed Inter-Agency Standing Committee guidelines (IASC, 2007), and good practice principles for assessments as outlined by the World Health Organization and the United Nations High Commission for Refugees (WHO/UNHCR, 2012). This assessment used a mixed methods approach, which included both quantitative and qualitative techniques. The quantitative component consisted of a structured, population-based sample survey, while the qualitative component included key informant interviews (KIIs), focus group discussions (FGDs), and consultative community meetings.

Qualitative assessments

District and community stakeholders such as community leaders, health workers, and female community health volunteers (FCHVs) were involved in these assessments. Other stakeholders included community members, NGO workers, traditional healers, teachers, politicians, and government officials. These participants were selected using purposive sampling.

Focus Group Discussion (FGD)
A total of 12 FGDs were conducted, four in each district. The discussions were held with a variety of groups including women's group representatives, teachers, youths, and the elderly. Each FGD consisted of one facilitator, one note taker, and approximately 7-12 participants. Each focus group discussion was about one hour long.

Key Informant Interview (KII)
A total of 30 KIIs were conducted, 10 in each district. Trained research assistants conducted one-on-one interviews in private locations and followed informed consent procedure. On average, interviews were about thirty minutes long. Interviews were conducted in Nepali or Tamang language and transcribed in Nepali immediately after the interviews. Interviews were then translated into English for analysis.

Community Consultative Meetings
Consultative meetings were held with key district-level stakeholders in each district. Representatives from district-level government institutions such as District Health Offices, District Development Committees, Women and Children Offices, and I/NGOs participated in these meetings. We shared preliminary findings from the assessment, and asked attendees for their thoughts on these preliminary results and suggestions for activities that would help address the MHPSS needs of earthquake-affected communities.

Quantitative assessments

Participants and procedure
Quantitative interviews were conducted in order to measure and estimate the extent of mental health and psychosocial problems. We interviewed community members who were not involved in qualitative assessments and who were 16 years or older.

Participants were selected randomly using a stratified multi-stage cluster sampling method (details of sample size and sampling procedure are below). Research assistants interviewed the participants at home or in another private location. On average, interviews were forty-five minutes long.

Sample size and sampling procedure

In calculating the sample size, we estimated an intra-class correlation (ICC) coefficient of 0.1 based on a previous cluster randomized trial of a psychosocial intervention in Nepal (Jordans et al., 2010). Using this ICC and VDCs as our primary sampling unit, we calculated a design effect of 1.8. We used a value of 20% as the expected prevalence of mental disorders following an emergency as estimated by WHO and UNHCR (2012). With a z value of 1.96 and precision of 0.05, we calculated a minimum sample size of 443. To account for possible errors and refusals, we aimed to interview 510 participants in total and include dan approximately equal number of participants from each of the three assessment districts.

The total sample size (n=510 adults) was divided into 3 districts i.e. approximately 170 from each district. The sample size per district was then divided into 3 VDCs/municipalities equally. This sample size was then sub-divided equally into 3 wards.

For the survey, we used a multi-stage cluster sampling technique to recruit participants. Within each of the assessment districts, we created a list of VDCs/municipalities where the *Utthan* earthquake recovery program was being implemented. Three VDCs/municipalities were chosen from each district in consultation with the Red Cross based on pre-defined criteria such as the impact of earthquake, socio-demographic composition of the population, and accessibility. For each of the 9 VDCs/municipalities that were chosen, six of the most affected wards were selected. Three wards were then randomly selected among those six.

In six of the selected VDCs, a list of all households was generated for each of the selected wards and approximately 19 households were then selected from each ward using a systematic random sampling method. One adult from each sampled household was then selected randomly.

In the remaining three selected VDCs – Bhalche, Thulogaun, and Thaha – the Spanish Red Cross has previously developed a database of "most vulnerable" households using an assessment tool with ten criteria, including earthquake-induced deaths of productive household members, a lack of food security or land ownership, and households headed by minors, the elderly, or women.[1]

In the VDCs where this database was available, the team used the same systematic sampling method to select equal numbers of households from those that were on the "most vulnerable" list and those that were not. Over these three VDCs, a total of 85 of the most vulnerable earthquake-affected households were included in this assessment.

Assessment tools

A similar facilitation guideline was used for both KIIs and FGDs and included questions and probes relevant to the assessment objectives. For the survey, we used existing tools that had been validated and used in Nepal. The quantitative survey included seven sections. The tools were used for research and screening psychosocial mental health symptoms but were not used for clinical diagnosis. The seven sections of assessment instruments are briefly summarized below.

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1 The vulnerability criteria covered 10 indicators: 1. Earthquake-induced death of a productive household member; 2. Households headed by a minor under 18 years of age; 3. Households headed by women with no adult men below age 60 and excluding households receiving remittances from male members working away from home; 4. Elderly, living either by themselves or in charge of children; 5. Households with at least one differently-abled family member; 6. Households with no adults able to leave home to work due to responsibilities caring for other family members; 7. Households with no regular income; 8. Caste or ethnic group; 9. Food insecurity; 10. Lack of ownership of arable or productive land.

Socio-demographic information: Socio-demographic information included sex, age, caste/ethnicity, education, occupation, religion, number of family members in the household, and number of disabled family members.

The Humanitarian Emergency Settings Perceived Needs (HESPER) Scale: HESPER is a needs assessment tool that provides a quick, scientifically robust way of assessing the perceived serious needs of people affected by large-scale humanitarian emergencies. Perceived needs are needs felt or expressed by people themselves, and are problem areas where they seek help. The HESPER scale was developed by the World Health Organization and King's College London to assess a wide range of social, psychological, and physical problems. It aims to identify serious perceived problems that are common in a population. The HESPER scale includes 26 potential problems the participant may currently be experiencing. Each item is responded to with "yes" or "no" when asked if the item is a "serious problem". This scale had been previously adapted for use with emergency-affected populations in Nepal (Jordans et al., 2012).

Functioning: A locally-developed functioning scale was used for this assessment (Luitel et al., 2013), which was also contextualized in a previous needs assessment in earthquake-affected districts (Kane et al., 2017). The scale includes ten items assessing the degree of difficulty in performing daily tasks (e.g., household work, taking care of family or children) within the past two weeks. Response options are on a Likert scale from 0 (not at all) to 3 (always). Items are added together to calculate a total score. Higher scores are associated with greater functional impairment.

The Hopkins Symptoms Checklist-25 (HSCL-25): HSCL-25 is a well-known and widely used screening tool, designed to detect symptoms of anxiety and depression. It is composed of a 10-item subscale for anxiety symptoms and a 15-item subscale for depression symptoms, with each item scored on a Likert scale from 1 (not at all) to 4 (extremely). Participants are asked how often in the past two weeks they have had symptoms. Originally developed as a self-report symptom inventory, it is often used as an interviewer administered scale in non-clinical settings. The HSCL-25 was previously validated in Nepal (Thapa & Hauff, 2005), and indicated that a cut-off score of 1.75 or above was indicative of probable depression or anxiety. Cronbach's alpha was 0.92 for the depression scale and 0.87 for anxiety.

PTSD Checklist-Civilian (PCL-C): The PCL-C is a standardized rating scale for PTSD comprising 17 items that correspond to the key symptoms of PTSD. The PCL-C is applied generally to any traumatic event. The items of PCL-C ask respondents how often they have experienced a symptom in the past week. The PCL-C can be easily modified to fit specific time frames or events (e.g. instead of asking about "the past month," questions may ask about "the past week" or be modified to focus on specific events). The PCL-C can either be a self-administered or interviewer-administered tool, and can to be used in non-clinical settings. Respondents indicate how much they have been affected by a symptom over the past week using a 5-point Likert scale ranging from 1 (not at all) to 5 (extremely). The PCL-C was previously validated in Nepal with total scores of 50 or above indicative of probable PTSD (Thapa & Hauff, 2005). Cronbach's alpha for PCL-C was 0.91.

Alcohol Use Disorder Identification Test (AUDIT): AUDIT was developed by the World Health Organization (WHO) as a screening tool in primary health care settings (Saunders, Aasland, Amundses & Grant, 1993). It can help identify excessive drinking as the cause of a presenting illness. The AUDIT also helps to identify alcohol dependence and some specific consequences of harmful drinking. It is particularly designed for health care practitioners in a range of health settings, but with suitable instructions it can be self-administered or used by non-health professionals. AUDIT has been validated in Nepal using Diagnostic and Statistical Manual of Mental

Disorders (DSM-IV)diagnostic categories (alcohol use and alcohol dependence) as the gold standard to calculate the diagnostic parameters of the AUDIT. A cutoff score of ≥9 has been recommended for alcohol dependence or alcohol abuse for both males (sensitivity 96.7, specificity 91.7) and females (sensitivity 94.3, specificity 91.4) (Pradhan et al., 2012).

Suicidal ideation and action: Suicide-related questions were adapted from the Composite International Diagnostic Interview (CIDI) suicidality module (Robins et al., 1988). Field researchers asked participants if they had thought of taking their own life in the past 12 months. Those who responded affirmatively to the ideation question were asked if they had made a plan to take their own life. Those who responded affirmatively to the planning question were asked if they had attempted to take their own life. Those who did not respond affirmatively to the planning question were asked if they had spoken to anyone and if they had sought any treatment.

Data analysis

The survey data were entered into Statistical Package for Social Science (SPSS) software, version 14. After cleaning the data in SPSS, the survey data was transformed and analyzed using Stata, version 13. To account for the complex assessment design, data were analyzed in Stata, version 13, using the svy: command and by assigning appropriate weights. We calculated mean average and total scores for the continuous scales (Functioning, HSCL-25, PCL-C and AUDIT). We also calculated the proportion of the sample with scores above the cut-off values for probable depression, anxiety, PTSD, and hazardous alcohol use. We conducted post-estimation tests to assess whether there were differences in depression, anxiety, PTSD or alcohol use based on the following demographic characteristics: sex, age, and caste/ethnicity. We calculated proportions for the suicide and HESPER items.

For qualitative data, all recorded audio and field notes of KIIs and FGDs were transcribed. A thematic analysis approach was used for data analysis. For this, the major themes were generated based on the assessment objectives. The textual data were analyzed manually. After carefully reading the transcripts, the findings were summarized district-wise in grid tables according to key emerging themes. Interpretative analysis was then carried out. Relevant statements from the participants have also been presented as a part of the analysis.

Ethical considerations and informed consent

The assessment received technical and ethical approval from the Nepal Health Research Council (NHRC), the national ethical body of the Government of Nepal. Moreover, all participants involved in this assessment were fully informed about the nature of the study, assessment objectives, and confidentiality of the collected information. Prior to the interview, all participants were asked for their consent to be included in the assessment. Only respondents who voluntarily agreed to participate were involved in the assessment. All assessment participants were informed of their right to refuse participation and to leave the interview at any time.

Results

Quantitative assessment results

Table 1 presents the socio-demographic characteristics of the respondents. The age of the respondents range from 16 to 86 years with a mean of 41.8 years (SD 17.0 year). More than half of the respondents were female (53.5%) and 46.5% were male. These population trends are similar in all three assessment districts. More than half (52.2%) of all the respondents are Tamang, followed by members of other Janajati groups (23.9%) and Brahmin/Chhetri (17.5%). There was a notable difference in the caste/ethnicity composition of participants in different districts. More than half (52.9%) of assessment participants self-identified as Buddhist, followed by Hindu (39.4%). Agriculture (73.3%) was the most commonly reported occupation in all three assessment districts, followed by homemaking (7.1%).

Table 1: Socio-demographic characteristics of respondents

	Overall (N=510)	Makwanpur (N=170)	Rasuwa (N=171)	Nuwakot (N=169)
Gender				
Male	237 (46.5)	83 (48.8)	75 (43.9)	79 (46.7)
Female	273 (53.5)	87 (51.2)	96 (56.1)	90 (53.3)
Age				
16-19	40 (7.8)	11 (6.4)	12 (7.0)	17 (10.1)
20-24	59 (11.6)	20 (11.8)	16 (9.4)	23 (13.6)
25-39	156 (30.6)	54 (31.8)	60 (35.1)	42 (24.8)
40-59	160 (31.4)	59 (34.7)	52 (30.4)	49 (29.0)
60+	95 (18.6)	26 (15.3)	31 (18.1)	38 (22.5)
Mean (SD)	41.8 (17.0)	41.6 (16.3)	41.5 (16.4)	42.2 (18.2)
Caste/Ethnicity				
Brahmin/Chhetri	89 (17.5)	29 (17.1)	43 (25.2)	17 (10.1)
Dalit	32 (6.3)	8 (4.7)	17 (9.9)	7 (4.1)
Janajati– Tamang	266 (52.2)	114 (67.1)	71 (41.5)	81 (47.9)
Janajati– Others(includes Chepang, Rai, Newar, Magar, Gurung, Tharu)	123 (23.9)	19 (11.2)	40 (23.4)	64 (37.9)
Education level				
Illiterate	222 (43.5)	86 (50.6)	66 (38.6)	70 (41.4)
Informal education	108 (21.2)	34 (20.0)	34 (19.9)	40 (23.7)
Primary completed	107 (21.0)	41 (24.1)	26 (15.2)	40 (23.7)
Secondary completed	39 (7.7)	5 (2.9)	22 (12.9)	12 (7.1)
Higher secondary completed	21 (4.1)	2 (1.2)	14 (8.2)	5 (3.0)
University completed	13 (2.6)	2 (1.2)	9 (5.3)	2 (1.2)

Occupation				
Agriculture	374 (73.3)	138 (81.2)	114 (66.7)	122 (72.2)
Service	22 (4.3)	5 (2.9)	12 (7.0)	5 (3.0)
Business	16 (3.1)	3 (1.8)	8 (4.7)	5 (3.0)
Wage/Labor	28 (5.4)	9 (5.3)	16 (9.4)	3 (1.8)
Housewife	36 (7.1)	9 (5.3)	7 (4.1)	20 (11.8)
Student	22 (4.3)	3 (1.8)	8 (4.7)	11 (6.5)
Unemployed	8 (1.6)	3 (1.8)	4 (2.3)	1 (0.6)
Others (includes trekking and older people unable to work)	4 (0.8)	0 (0.0)	2 (1.2)	1 (1.2)
Religion				
Hindu	201 (39.4)	59 (34.7)	68 (39.8)	74 (43.8)
Buddhist	270 (52.9)	102 (60.0)	83 (48.5)	85 (50.3)
Christian	17 (3.3)	6 (3.5)	1 (0.6)	10 (5.9)
Others	22 (4.3)	3 (1.8)	19 (11.2)	0 (0.0)
Marital status				
Single	49 (9.6)	18 (10.6)	12 (7.0)	19 (11.2)
Married	412 (80.8)	135 (79.4)	145 (84.8)	132 (78.1)
Widowed	43 (8.4)	15 (8.8)	12 (7.0)	16 (9.5)
Divorced	3 (0.6)	1 (0.6)	1 (0.5)	1 (0.6)
Separated	3 (0.6)	1 (0.6)	1 (0.6)	1 (0.6)
Number of family members				
1-3	109 (21.4)	26 (15.3)	42 (24.6)	41 (24.3)
4-5	201 (39.4)	59 (34.7)	79 (46.2)	63 (37.3)
6 or more	200 (39.2)	85 (50.0)	50 (29.2)	65 (38.4)
Mean (SD)	5.3 (2.6)	6.0 (2.7)	4.8 (2.0)	5.2 (2.8)
Number of disabled family members				
None	406 (79.6)	140 (82.4)	131 (76.6)	135 (79.9)
One	98 (19.2)	29 (17.1)	36 (21.1)	33 (19.5)
Two or more	6 (1.2)	1 (0.6)	4 (2.3)	1 (0.6)
Type of household				
General earthquake affected	425 (83.3)	142 (83.5)	142 (83.0)	141 (83.4)
Identified as "most vulnerable" according to Red Cross criteria	85 (16.7)	28 (16.5)	29 (17.0)	28 (16.6)

We assessed the most persistent needs of the community using the HESPER scale *(results summarized in Table 2).* In the overall sample, income/livelihood (73.2%) was reported as the most pressing need of the affected communities, followed by shelter (63.5%), and support to deal with distress/tension (61.0%). These were also the three most cited needs in all three districts. Similarly, assistance for keeping clean (57.9%) was the fourth most frequently reported need overall. Other frequently reported needs varied according to district and included food, toilets, drinking water, and assistance to make movement or travel easier.

Table 2: Percentages of respondents reporting HESPER needs by district

	Overall (N=510)	Makwanpur (N=170)	Rasuwa (N=171)	Nuwakot (N=169)
	% (95% confidence interval)			
Income/livelihood	73.2 (69.3 - 76.7)	76.8 (71.3 - 81.6)	76.5 (69.7 - 82.3)	65.4 (61.4 - 69.2)
Shelter	63.5 (60.3 - 66.6)	62.4 (58.4 - 66.3)	64.5 (59.3 - 69.4)	65.7 (60.3 - 70.7)
Distress/tension	61.0 (58.1 - 63.9)	69.4 (65.6 - 72.9)	65.2 (59.2 - 70.8)	43.7 (39.3 - 48.3)
Keeping clean	57.9 (51.1 - 64.4)	67.2 (56.4 - 76.4)	49.5 (41.8 - 57.3)	39.1 (35.5 - 42.9)
Drinking water	48.5 (42.4 - 54.6)	56.6 (47.3 - 65.4)	48.2 (43.0 - 53.5)	31.8 (26.7 - 37.3)
Moving between places	47.5 (38.8 - 56.3)	54.7 (41.3 - 67.4)	60.5 (52.3 - 68.1)	32.0 (27.9 - 36.5)
Food	39.2 (34.8 - 43.7)	46.7 (40.7 - 53.0)	34.2 (28.7 - 40.1)	23.7 (20.0 - 27.9)
Toilets	39.0 (32.9 - 45.4)	41.3 (32.6 - 50.6)	49.4 (43.2 - 55.6)	33.7 (27.5 - 40.6)
Clothes and bedding	38.8 (35.3 - 42.5)	44.7 (39.7 - 50.0)	40.6 (32.2 - 49.7)	26.5 (22.3 - 31.2)
Information	34.7 (30.0 - 39.6)	42.9 (36.2 - 50.0)	23.6 (19.4 - 28.3)	18.2 (15.3 - 21.5)
Way aid is provided	34.5 (31.1 - 37.9)	42.2 (38.4 - 46.3)	30.1 (26.7 - 35.0)	18.5 (14.2 - 23.6)
Care for family	33.5 (30.8 - 36.3)	39.4 (35.4 - 43.6)	41.4 (35.5 - 47.6)	21.0 (17.4 - 25.0)
Health care	32.4 (27.6 - 37.5)	39.5 (32.6 - 47.0)	34.9 (24.7 - 46.6)	17.6 (14.0 - 21.8)
Physical health	28.3 (26.0 - 30.7)	31.4 (28.5 - 34.5)	47.4 (40.9 - 54.0)	21.1 (18.2 - 24.3)
Too much free time	26.7 (21.7 - 32.3)	36.0 (29.5 - 43.0)	37.8 (31.6 - 44.4)	7.1 (4.9 - 10.0)
Law and justice in the community	24.7 (21.1 - 28.6)	26.1 (21.2 - 31.8)	33.1 (24.1 - 43.5)	21.3 (17.5 - 25.8)
Education for children	18.3 (14.4 - 23.0)	21.5 (15.6 - 28.8)	21.8 (16.9 - 27.6)	11.6 (8.4 - 15.8)
Mental illness in the community	17.0 (14.5 - 20.0)	15.7 (12.6 - 19.4)	36.3 (30.3 - 42.8)	19.0 (14.9 - 23.9)
Support from others	16.7 (13.4 - 20.8)	17.4 (12.7 - 23.4)	36.6 (30.6 - 43.0)	14.6 (11.4 - 18.5)
Care for people on their own	15.0 (12.4 - 18.0)	8.2 (5.8 - 11.5)	40.9 (32.0 - 50.4)	27.9 (23.0 - 33.3)
Respect	14.9 (12.8 - 17.2)	16.7 (13.9 - 20.0)	26.8 (22.0 - 32.2)	10.7 (8.4 - 13.4)
Alcohol/drug use in the community	13.8 (12.1 - 15.7)	15.8 (13.5 - 18.4)	30.4 (25.5 - 35.8)	9.1 (6.7 - 12.3)
Safety for women in the community	8.6 (7.3 - 10.3)	7.6 (6.2 - 9.3)	24.5 (19.9 - 30.0)	10.2 (7.4 - 13.9)
Separation from family	8.4 (6.9 - 10.1)	4.2 (2.7 - 6.6)	7.3 (5.1 - 10.5)	16.9 (13.8 - 20.6)
Safety	5.5 (4.1 - 7.3)	6.7 (4.9 - 9.2)	8.3 (5.7 - 12.0)	3.0 (1.5 - 6.0)
Displaced	1.6 (1.0 - 2.6)	1.1 (0.5 - 2.4)	0 (0.0)	2.7 (1.6 - 4.5)
Mean number of needs (95% CI)	8.0 (7.5 - 8.6)	8.9 (8.1 - 9.7)	9.7 (8.7 - 10.7)	6.1 (5.7 - 6.5)

Table 3 presents the most persistent needs of the communities by household vulnerability. Responses from the 85 households fulfilling the "most vulnerable" criteria in an earlier Red Cross assessment have been presented separately. In general, respondents from the most vulnerable earthquake-affected households reported more perceived needs. For example, 82.8% of the respondents from these most vulnerable households reported income/livelihood as their most pressing need, whereas this proportion is 69.4% in the general earthquake-affected population. Similarly, shelter (71.7% vs. 61.5%), support to deal with distress/tension (71.5%

vs. 55.6%), care for family (43.9% vs. 29.2%), the way aid is provided (42.0% vs. 29.2%), and too much free time (41.9% vs. 20.2%) were other areas where most vulnerable earthquake-affected respondents reported more need. On the other hand, more respondents from the general earthquake affected population (55.0%) reported assistance for keeping clean as a need compared to 54.0% respondents of the most vulnerable earthquake-affected households. Assistance for movement or travel between places (48.0% vs. 41.8%), drinking water (46.7% vs. 45.0%) and toilets (43.0% vs. 26.2%) were other areas where respondents from general earthquake affected households reported more need.

Table 3: Prevalence of HESPER needs by household vulnerability

	Overall (N=510)	General earthquake-affected households (N=425)	Households identified as "most vulnerable" (N=85)
	% (95% confidence interval)		
Income/livelihood	73.2 (69.3 - 76.7)	69.4 (65.2 - 73.3)	82.8 (78.3 - 86.6)
Shelter	63.5 (60.3 - 66.6)	61.5 (58.4 - 64.6)	71.7 (62.7 - 79.3)
Distress/tension	61.0 (58.1 - 63.9)	55.6 (52.4 - 58.7)	71.5 (62.6 - 79.0)
Keeping clean	57.9 (51.1 - 64.4)	55.0 (50.7 - 59.2)	54.0 (42.0 - 65.6)
Drinking water	48.5 (42.4 - 54.6)	46.7 (42.3 - 51.2)	45.0 (33.4 - 57.3)
Moving between places	47.5 (38.8 - 56.3)	48.0 (42.8 - 53.3)	41.8 (27.6 - 57.5)
Food	39.2 (34.8 - 43.7)	35.9 (32.1 - 40.0)	39.9 (32.8 - 47.4)
Toilets	39.0 (32.9 - 45.4)	43.0 (38.6 - 47.6)	26.2 (18.7 - 35.5)
Clothes - bedding	38.8 (35.3 - 42.5)	37.0 (33.8 - 40.4)	38.7 (31.6 - 46.3)
Information	34.7 (30.0 - 39.6)	29.3 (25.6 - 33.2)	39.6 (30.8 - 49.2)
Way aid is provided	34.5 (31.1 - 37.9)	29.2 (26.4 - 32.2)	42.0 (34.1 - 50.3)
Care for family	33.5 (30.8 - 36.3)	29.2 (26.2 - 32.5)	43.9 (39.9 - 48.1)
Health care	32.4 (27.6 - 37.5)	29.8 (26.7 - 33.1)	33.9 (22.5 - 47.6)
Physical health	28.326.0 - 30.7)	28.0 (25.8 - 30.4)	32.3 (26.8 - 38.4)
Too much free time	26.7 (21.7 - 32.3)	20.2 (17.3 - 23.4)	41.9 (30.7 - 53.9)
Law and justice in the community	24.7 (21.1 - 28.6)	23.8 (21.1 - 26.7)	29.9 (19.7 - 40.5)
Education for children	18.3 (14.4 - 23.0)	17.0 (14.2 - 20.2)	20.3 (12.6 - 30.9)
Mental illness in the community	17.0 (14.5 - 20.0)	19.6 (16.7 - 22.8)	16.8 (13.0 - 21.5)
Support from others	16.7 (13.4 - 20.8)	19.4 (16.7 - 22.4)	14.2 (9.3 - 21.1)
Care for people on their own	15.0 (12.4 - 18.0)	19.2 (16.1 - 22.6)	17.8 (13.2 - 23.6)
Respect	14.9 (12.8 - 17.2)	11.6 (9.8 - 13.7)	28.2 (25.0 - 31.7)
Alcohol/drug use in the community	13.8 (12.1 - 15.7)	16.2 (14.1 - 18.5)	9.4 (6.4 - 13.4)
Safety for women in the community	8.6 (7.3 - 10.3)	9.6 (8.3 - 11.1)	12.2 (8.1 - 18.1)
Separation from family	8.4 (6.9 - 10.1)	8.5 (6.9 - 10.5)	12.2 (9.0 - 16.4)
Safety	5.5 (4.1 - 7.3)	3.7 (2.6 - 5.2)	11.3 (7.5 - 16.7)
Displaced	1.6 (1.0 - 2.6)	1.4 (0.1 - 2.4)	2.3 (0.1 - 5.4)
Mean number of needs (95% CI)	8.0 (7.5 - 8.6)	7.7 (7.3 - 8.1)	8.8 (7.7 - 9.8)

Figure 1 shows that roughly two-fifths (39.4% and 38.4%) of the sample reported symptoms of depression and anxiety, whereas symptoms of PTSD were reported by 16.3%. Symptoms of alcohol use problems were reported by 25.5% and suicidal thoughts by 21.7%.

Figure 1: Estimates of depression, anxiety, PTSD, alcohol use problems, and suicidal thoughts
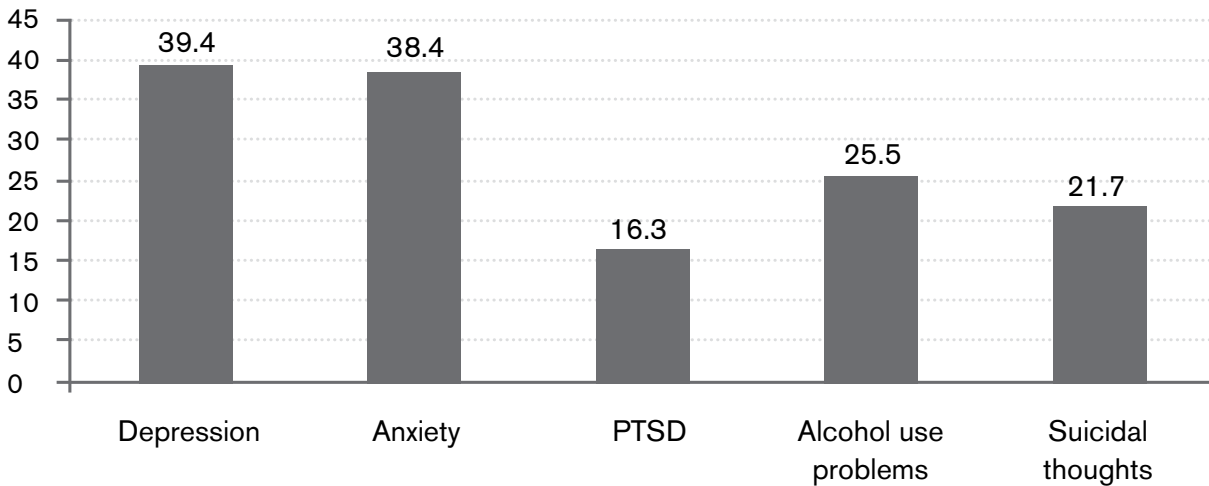

Table 4 compares reported symptoms of depression, anxiety, PTSD, alcohol use problems, and suicidal thoughts and action by geographic location. There were differences in reporting across the three districts, with the highest estimates in Rasuwa (depression 51.1%, anxiety 51.9%, and PTSD 24.4%) followed by Makwanpur (depression 44.4%, anxiety 40.3%, and PTSD 19.7%) and Nuwakot (depression 28.7%, anxiety 33.9%, and PTSD 9.0%). Alcohol problems (27.8%) and suicidal thoughts (27.8%) were higher in Makwanpur than the other two districts.

Table 4: Estimates of depression, anxiety, PTSD, alcohol use problems, suicidal ideation, and suicide attempts by district

	Overall (N=510)	Makwanpur (N=170)	Rasuwa (N=171)	Nuwakot (N=169)
	% (95% confidence interval)			
Depression symptoms	39.4 (36.9 - 41.9)	44.4 (40.9 - 47.9)	51.1 (45.8 - 56.3)	28.7 (24.2 - 33.6)
Anxiety symptoms	38.4 (35.5 - 41.4)	40.3 (36.4 - 4.3)	51.9 (45.6 - 58.1)	33.9 (29.4 - 38.8)
PTSD symptoms	16.3 (14.1 - 18.7)	19.7 (16.5 - 23.3)	24.4 (20.4 - 29.0)	9.0 (6.3 - 12.7)
Alcohol use problems	25.5 (22.7 - 28.6)	27.8 (24.3 - 31.5)	23.4 (14.6 - 35.3)	21.1 (16.3 - 26.8)
Suicidal thoughts	21.7 (19.3 - 24.2)	27.8 (24.5 - 31.4)	11.5 (6.9 - 18.6)	9.5 (6.4 - 13.8)
Suicide plan	3.6 (2.6 - 5.0)	3.9 (2.5 - 5.9)	2.5 (1.2 - 5.0)	3.1 (1.9 - 5.1)
Suicide attempt	1.0 (0.6 - 1.8)	0.9 (0.3 - 2.0)	1.0 (0.4 - 2.7)	1.3 (0.6 - 2.9)

Table 5 reveals that respondents from earthquake-affected households that fell in the "most vulnerable" category were more likely to report symptoms of depression (44.6%) and anxiety (49.9%) in comparison to other households (depression 37.7% and anxiety 34.5%). Likewise, 31.2% of the respondents from these most vulnerable households had suicidal thoughts within the past year, which was significantly higher than the 18.5% reported in other households. On the other hand, these highly vulnerable households were less likely to report alcohol use problems (18.4%) than the other earthquake-affected households (27.9%).

Table 5: Estimates of depression, anxiety, PTSD, alcohol use problems, suicidal ideation, and suicide attempts by type of household vulnerability

	General earthquake-affected households (N=425)	Households identified as "most vulnerable" (N=85)
Depression symptoms	37.7 (33.7 - 41.8)	44.6 (38.0 - 51.4)
Anxiety symptoms	34.5 (30.7 - 38.6)	49.9 (46.5 - 53.3)
PTSD symptoms	16.1 (13.5 - 18.9)	16.9 (13.8 - 20.6)
Alcohol use problems	27.9 (24.5 - 31.6)	18.4 (15.4 - 21.7)
Suicidal thoughts	18.5 (15.3 - 22.1)	31.2 (26.8 - 36.1)
Suicide plan	3.6 (2.5 - 5.3)	3.6 (1.6 - 7.7)
Suicide attempt	1.0 (0.5 - 2.0)	0.9 (0.3 - 2.9)

Table 6 presents MHPS symptoms by sex of the respondents. It shows that the occurrence of symptoms of depression (43.5%), anxiety (43.2%), PTSD (21.3%), and suicidal thoughts (27.4%) were significantly greater among women. Meanwhile, alcohol use problems were higher among men (32.4%) than their female counterparts (19.2%).

Table 6: Estimates of depression, anxiety, PTSD, alcohol use problems, suicidal ideation, and suicide attempts by sex

	Male (N=237)	Female (N=273)
Depression symptoms	35.0 (29.5 - 40.9)	43.5 (38.3 - 48.8)
Anxiety symptoms	33.1 (28.0 - 38.6)	43.2 (39.8 - 46.7)
PTSD symptoms	10.8 (8.4 - 13.8)	21.3 (18.3 - 24.6)
Alcohol use problems	32.4 (27.2 - 38.2)	19.2 (15.7 - 23.3)
Suicidal thoughts	15.4 (12.3 - 19.1)	27.4 (23.4 - 31.9)
Suicide plan	0.7 (0.3 - 1.8)	6.3 (4.5 - 8.6)
Suicide attempt	0.7 (0.3 - 1.7)	1.3 (0.6 - 2.7)

Table 7 shows that unmarried respondents reported more symptoms of depression (48.5%) than their married (37.9%) and widowed, divorced, or separated counterparts(40.1%). Meanwhile, symptoms of anxiety (49.4%), PTSD (27.8%), and suicidal thoughts (26.0%) were higher among those who were widowed, divorced, or separated compared to single or married respondents. Alcohol use problems were higher among respondents who were married (28.6%).

Table 7: Estimates of depression, anxiety, PTSD, alcohol use problems, suicidal ideation, and suicide attempts by marital status

	Single (N=49)	Married (N=412)	Widowed/Divorced/Separated (N=49)
Depression symptoms	48.5 (41.5 - 55.5)	37.9 (34.6 - 41.3)	40.1 (33.6-46.9)
Anxiety symptoms	33.6 (25.3 - 43.0)	37.1 (33.6 - 40.8)	49.4 (41.4-57.4)
PTSD symptoms	9.8 (5.2 - 17.7)	15.2 (12.7 - 18.1)	27.8 (21.1-35.7)
Alcohol use problems	21.6 (11.1 - 38.0)	28.6 (25.2 - 32.3)	11.9 (6.3-21.4)
Suicidal thoughts	19.7 (11.2 - 32.4)	21.1 (18.4 - 24.3)	26.0 (14.6-41.4)
Suicide plan	5.4 (2.4 - 11.7)	3.5 (2.3 - 5.2)	2.9 (0.9-8.7)
Suicide attempt	-	0.8 (0.4 - 1.7)	2.8 (0.9-8.7)

Table 8 indicates that respondents from non - Tamang Janajati ethnic groups – including Chepang, Magar, and Tharu – reported the highest symptoms of depression (66.6%), anxiety (58.6%), PTSD (50.0%), and suicidal thoughts (41.0%) followed by Brahmin/Chhetri participants (depression 44.2%, anxiety 48.0%, PTSD 20.9% and suicidal thoughts 28.6%). Fewer Rai and Dalit respondents reported symptoms of depression (22.6% and 23.1% respectively), anxiety (20.1% and 19.7% respectively), PTSD (5.4% and 15.1% respectively), and suicidal thoughts (0% and 11.2% respectively). However, a high percentage of Rai respondents reported alcohol use problems (40.4%).

Table 8: Estimates of depression, anxiety, PTSD, alcohol use problem, suicidal ideation, and suicide attempts by caste/ethnicity

	Brahmin/ Chhetri (N=89)	Dalit (N=32)	Tamang (N=266)	Gurung (N=64)	Rai (N=36)	Other (Chepang, Newar, Magar, Tharu) (N=23)
Depression symptoms	44.2 (39.1 - 49.4)	23.1 (12.8 - 37.9)	38.6 (35.3 - 41.9)	37.1 (23.5 - 53.1)	22.6 (16.5 - 30.2)	66.6 (58.3 - 74.0)
Anxiety symptoms	48.0 (42.7 - 53.2)	19.7 (10.2 - 34.6)	36.3 (32.9 - 39.9)	43.0 (27.5 - 60.0)	20.1 (15.3 - 26.1)	58.6 (49.0 - 67.6)
PTSD symptoms	20.9 (15.7 - 27.2)	15.1 (7.6 - 27.8)	13.7 (11.5 - 16.1)	10.1 (4.6 - 20.6)	5.4 (3.1 - 9.3)	50.0 (41.5 - 58.8)
Alcohol use problems	6.2 (4.2 - 9.0)	25.5 (11.1 - 48.0)	33.4 (29.2 - 37.8)	2.8 (1.0 - 7.5)	40.4 (33.9 - 47.3)	10.8 (4.1 - 25.6)
Suicidal thoughts	28.6 (23.9 - 33.7)	11.2 (4.8 - 23.7)	21.7 (17.9 - 26.1)	13.3 (7.2 - 23.3)	-	41.0 (31.9 - 50.8)
Suicide plan	8.2 (5.7 - 11.5)	3.4 (0.9 - 11.7)	2.6 (1.6 - 4.1)	0.2 (0.1 - 0.8)	-	7.8 (4.0 - 14.5)
Suicide attempt	1.0 (0.3 - 3.6)	3.3 (0.9 - 11.7)	1.2 (0.6 - 2.5)	-	-	-

There was huge variation in reports of MHPS symptoms by Village Development Committee (VDCs). Symptoms of depression and alcohol use problems were highest among the respondents from Khairang, Makwanpur (depression 59.9%, alcohol use problems 43.1%) and Yarsa, Rasuwa (depression 58.7%, alcohol use problems 47.4%). Similarly, symptoms of anxiety were highest in Yarsa (58.7%) and Dhaibung (53.1%) of Rasuwa district, whereas the symptoms of PTSD were highest in Khairang, Makwanpur(32.2%) and Dhaibung, Rasuwa (26.5%). Suicidal thoughts were highest in Gogane, Makwanpur (37.2%) and Thulogaun, Rasuwa (34.3%) (see Table 9 for details).

Table 9: Estimates of depression, anxiety, PTSD, alcohol use problems, suicidal ideation, and suicide attempts by VDC

	Makwanpur			Rasuwa			Nuwakot		
	Khairang (N=56)	Thaha (N=57)	Gogane (N=57)	Yarsa (N=57)	Dhaibung (N=57)	Thulogaun (N=57)	Suryamati (N=57)	Urleni (N=55)	Bhalche (N=57)
Depression symptoms	59.9	39.0	49.1	58.7	47.0	46.5	28.0	21.0	37.2
Anxiety symptoms	46.6	36.3	46.0	58.7	53.1	36.9	23.6	29.0	47.7
PTSD symptoms	32.2	17.1	19.7	24.0	26.5	20.4	5.3	3.6	17.6
Alcohol use problems	43.1	29.1	17.9	47.4	3.3	25.9	32.2	39.3	3.3
Suicidal thoughts	29.0	23.2	37.2	2.7	8.4	34.3	0	3.7	19.8
Suicide plan	3.7	4.4	2.8	0	1.6	9.0	0	1.6	7.3
Suicide attempt	2.4	0	2.1	0	1.6	1.3	0	1.6	2.0

Table 10 presents the adjusted odds ratio of risk and protective factors for depression and anxiety symptoms from multivariate logistic regression models. Being female, older age, having disabled family members in the household, reporting many perceived needs and having greater impairment in daily activities were risk factors for depression and anxiety symptoms. People who had a primary level of education, worked as daily wage laborers, Christian or of other minority faiths were less at risk for both depression and anxiety. Those who were married or had been widowed, divorced, or separated were less at risk for having depression than their unmarried counterparts. Respondents from Nuwakot district were less likely to have depression than participants from Makwanpur and Rasuwa. In addition, having a secondary level of education, being a member of a household identified as "most vulnerable", or being a resident of Rasuwa district had asignificant association with higher levels of anxiety symptoms.

Table 10: Variables associated with depression and anxiety symptoms

	Depression		Anxiety	
	Adjusted OR	p value	Adjusted OR	p value
Sex				
Male	1	-	1	-
Female	2.54 (1.46 - 4.44)	0.006	1.96 (1.46 - 2.65)	0.001
Age				
16 -19	1	-	1	-
20-24	0.69 (0.25 - 1.93)	0.417	1.48 (0.56 - 3.93)	0.360
25-39	1.06 (0.52 - 2.16)	0.838	1.21 (0.53 - 2.77)	0.588
40-59	0.62 (0.27 - 1.42)	0.207	0.98 (0.34 - 2.84)	0.966
60+	3.03 (1.13 - 8.07)	0.033	4.48 (1.56 - 12.88)	0.013
Education				
Illiterate	1	-	1	-
Informal education	2.24 (1.30 - 3.86)	0.011	0.90 (0.52 - 1.57)	0.659
Primary level	0.65 (0.42 - 0.99)	0.047	0.43 (0.25 - 0.76)	0.010
Secondary level	1.90 (0.99 - 3.65)	0.053	2.08 (1.04 - 4.14)	0.041
Higher secondary level or above	0.86 (0.28 - 2.64)	0.753	0.58 (0.20 - 1.70)	0.263

Occupation				
Agriculture	1	-	1	-
Job/services/business	0.99 (0.35 - 2.85)	0.986	0.51 (0.21 - 1.21)	0.105
Wage labor	0.14 (0.06 - 0.29)	0.001	0.29 (0.15 - 0.58)	0.004
Other (Unemployed, students, older people, housewives)	0.74 (0.44 - 1.25)	0.208	0.93 (0.55 - 1.58)	0.747
Marital status				
Single	1	-	1	-
Married	0.29 (0.15 - 0.58)	0.005	0.73 (0.42 - 1.28)	0.223
Widowed/Divorced/ Separated	0.17 (0.05 - 0.53)	0.009	0.77 (0.35 - 1.67)	0.433
Religion				
Hindu	1	-	1	-
Buddhist	1.66 (0.74 - 3.76)	0.178	0.90 (0.48 - 1.69)	0.701
Christian/Other faiths	0.13 (0.05 - 0.30)	0.001	0.21 (0.09 - 0.49)	0.004
Type of household				
General earthquake affected	1	-	1	-
Identified as "most vulnerable" according to Red Cross criteria	0.99 (0.59 - 1.65)	0.955	2.33 (1.67 - 3.24)	0.001
Caste				
Brahmin/Chhetri	1	-	1	-
Dalit	0.50 (19.0 - 1.31)	0.127	0.17 (0.05 - 0.54)	0.010
Tamang	1.09 (0.46 - 2.57)	0.809	0.88 (0.46 - 1.71)	0.664
Others (Chepang, Gurung, Rai, Newar, Magar, Tharu)	4.24 (2.12 - 8.49)	0.002	1.44 (0.87 - 2.40)	0.130
Disabled members in the household				
No	1	-	1	-
Yes	5.65 (3.40 - 9.40)	0.000	2.39 (1.58 - 3.63)	0.002
District				
Makwanpur	1	-	1	-
Rasuwa	0.99 (0.51 - 1.92)	0.985	1.83 (1.00 - 3.34)	0.048
Nuwakot	0.40 (0.25 - 0.65)	0.004	1.18 (0.80 - 1.74)	0.339
Number of family members	1.04 (0.98 - 1.10)	0.152	1.03 (0.97 - 1.09)	0.338
General needs (HESPER total)	1.21 (1.17 - 1.26)	0.000	1.16 (1.11 - 1.22)	0.000
Functioning total	1.26 (1.21 - 1.31)	0.000	1.18 (1.13 - 1.24)	0.000

Table 11 presents the adjusted odds ratios of risk and protective factors for symptoms of PTSD and alcohol use problems from multivariate logistic regression models. Results show that being female, working as a daily wage laborer or having a job or business, being Buddhist, being from Janajati ethnic groups (Chepang, Gurung, Rai, Magar, Newar, Tharu), having disabled family members, reporting more perceived needs, and higher impairment in functioning were all significantly associated with higher level of PTSD symptoms. Being between ages 20 to 59, having a primary level education, being Christian or of another minority faith, being a member of the most vulnerable earthquake-affected households and being a resident of Nuwakot were protective factors for PTSD symptoms.

Participants who were age 25 or above, had a secondary level of education, and were from non - Brahmin/Chhetri ethnic groups were significantly associated with higher symptoms of alcohol use problems. Being a woman, having a non-farming occupation, being Buddhist, Christian or of another minority faith, and having greater impairment in daily functioning were protective factors for alcohol use problems.

Table 11: Variables associated with symptoms of PTSD and alcohol use problems

	PTSD		Alcohol use problem	
	Adjusted OR	p value	Adjusted OR	p value
Sex				
Male	1	-	1	-
Female	4.27	0.001	0.69 (0.48 - 0.98)	0.042
Age				
16 -19	1	-	1	-
20-24	0.16 (0.6 - 0.43)	0.004	0.87 (0.36 - 2.09)	0.712
25-39	0.17 (0.06 -0.51)	0.008	3.01 (1.18 - 7.69)	0.028
40-59	0.14 (0.04 - 0.55	0.013	4.90 (1.68 - 14.27)	0.011
60+	0.64 (0.18 - 2.23)	0.417	4.21 (1.13 - 15.64)	0.036
Education				
Illiterate	1	-	1	-
Informal education	0.86 (0.44 - 1.67)	0.595	1.38 (0.71 - 2.66)	0.277
Primary level	0.20 (0.79 - 0.52)	0.006	1.37 (0.84 - 2.24)	0.169
Secondary level	0.80 (0.23 - 2.79)	0.682	14.28 (4.31 - 47.25)	0.002
Higher secondary level or above	0.35 (0.81 - 1.46)	0.122	0.11 (0.02 - 0.47)	0.010
Occupation				
Agriculture	1	-	1	-
Job/Business	14.77 (4.71 - 46.34)	0.001	0.26 (0.10 - 0.64)	0.011
Wage labor	4.80 (1.73 - 13.36)	0.009	0.50 (0.17 - 1.41)	0.153
Others (Unemployed, students, older people, housewives)	1.85 (0.58 - 5.91)	0.240	0.43 (0.20 - 0.90)	0.031
Marital status				
Single	1	-	1	-
Married	1.55 (0.55 - 4.35)	0.336	1.26 (0.47 - 3.34)	0.587
Widowed/Divorced/ Separated	1.29 (0.33 - 5.07)	0.666	0.48 (0.13 - 1.78)	0.219
Religion				
Hindu	1	-	1	-
Buddhist	1.74 (1.03 - 2.93)	0.042	0.46 (0.25 - 0.84)	0.019
Christian/Other faiths	0.55 (0.24 - 1.27)	0.131	0.15 (0.06 - 0.38)	0.02
Type of household				
General earthquake affected	1	-	1	-
Identified as "most vulnerable" according to Red Cross criteria	0.42 (0.23 - 0.77)	0.013	0.82 (0.57 - 1.19)	0.249
Caste				
Brahmin/Chhetri	1	-	1	-
Dalit	0.75 (0.30 - 1.90)	0.484	4.62 (1.21 - 17.60)	0.031
Tamang	0.52 (0.25 - 1.07)	0.069	18.71 (9.16 - 38.22)	0.000
Others (Chepang, Gurung, Rai, Magar, Newar, Tharu)	3.71 (1.93 - 7.13)	0.003	7.96 (4.51 - 14.04)	0.000
Disabled members in the household				
No	1	-	1	-
Yes	3.14 (1.74 - 5.70)	0.003	0.77 (0.49 - 1.20)	0.200

District				
Makwanpur	1	-	1	-
Rasuwa	0.65 (0.38 - 1.11)	0.097	1.07 (0.58 - 1.98)	0.781
Nuwakot	0.24 (0.11 - 0.50)	0.003	0.65 (0.38 - 1.09)	0.086
Number of family members	1.04 (0.94 - 1.15)	0.387	1.06 (0.97 - 1.15)	0.155
General needs (HESPER total)	1.11 (1.04 - 1.18)	0.006	1.02 (0.98 - 1.05)	0.260
Functioning total	1.19 (1.15 - 1.23)	0.000	0.94 (0.92 - 0.97)	0.002

Results from qualitative assessment

Social problems due to the earthquake

Respondents from all three districts reported destruction of houses, schools, and other public buildings. They also reported problems from damage to drinking water systems, as well as water sources drying up following the earthquake. Participants from Makwanpur and Rasuwa reported irrigation problems as a result of infrastructure destruction. One farmer also mentioned his belief that there had been environmental pollution due to gases emitted from earthquake fissures in Nuwakot. Respondents from Makwanpur reported pollution and disorder in their surroundings. The respondents also complained that they had not yet received any technical or infrastructural support for reconstruction of their damaged houses, as national systems for providing reconstruction support had not yet begun at the time of the assessment.

"The earthquake hit and destroyed everything–toilets, drinking water pipes and taps, irrigation canals, everything. Right now if we want to build a wall, we cannot. If we ask for pipes, no organization is going to provide us with them. So we are just surviving."

- FGD-Adult Group, Makwanpur

Roads in all assessment districts were damaged; in Rasuwa district in particular, hillsides that had been destabilized by the earthquake and subsequent aftershocks were prone to landslides. Electricity poles and wires were also compromised. Consequently, many people from villages shifted to the cities fearing for their lives after the earthquake. In some cases, household conflicts resulted in families breaking up. Because many husbands worked abroad, their wives suffered as they coped alone. The respondents complained that some people received relief materials more than once. Moreover, they reported that relief materials were provided to friends or relatives of the distributors, and that lower class people were always dominated by the upper-class people. Women faced problems handling menstruation while living in tents with large groups of people. One of the respondents also said that there was an incident where men were sleeping in one row and women in another row of the same room, but the next morning they saw a man sleeping in the women's row, compromising women's safety. In addition, after the earthquake people could not arrange contraceptives and plan pregnancy gaps.

"I think that because this is a very backward village it is difficult to even get to the health post if you're sick. After the earthquakes came, we made reports saying that we could no longer live here. Here there is no place for people to go, but many houses are at risk of landslides. Some people are staying here, but some have already migrated to the cities."

- KII-NRCS Volunteer, 35, Rasuwa

Economic problems due to the earthquake

Immediately after the earthquake, people suffered problem securing shelter, food, and drinking water. The respondents reported destruction of homes, burial of food and property and cracks in buildings. A lack of adequate and timely support from the government to rebuild homes has been a problem. People have not had suitable homes to live in. In Rasuwa, toilet construction was also a problem. The agricultural sector was also affected as people were not able to grow crops due to the destruction of irrigation canals. Respondents in all three districts reported deaths of livestock including goats, hens, and buffaloes in the earthquake.

"Many problems arose due to the earthquake: houses fell down, some people died, cattle were killed. Some families' buffaloes died, others had goats die. Mine were also buried in the rubble. We didn't receive any compensation. No one has come to help us yet."

- KII-FCHV, 50, Nuwakot

General health problems resulting from the earthquake

Diarrhea, vomiting, headaches, stomachaches, colds and coughs, viral fevers, allergies, itchy skin, and pneumonia were among the most common health hazards in the districts after the earthquake. Many respondents in Makwanpur reported being jaundiced and an increase in vision problems. The respondents attributed falling sick due to air and water pollution, and many believed that cracks in the land had emitted pollutant gases. Children were affected the most by health issues. Skin lesions *(khatira)* and minor wounds became infected and worsened as water was polluted after the earthquake. A member of a women's group said that there had been an outbreak of diarrhea in Rasuwa during the earthquake because around 70 people were living in one place with no toilets. The female participants complained of uterine prolapse and menstrual problems. Miscarriages were reported and remained a problem.

"Young children get colds easily and suffer from pneumonia. They sleep in temporary shelters, the wind blows through, and frost seeps in as well. It gets cold. The elderly cannot tolerate this cold and it makes it very difficult for the children."

- FGD-Mothers' Group, Makwanpur

Mental health and psychosocial problems immediately after the earthquake

Fear was common in the aftermath of the earthquake. Fear of aftershocks and feeling as if the earth was shaking even when it was not were reported. The respondents reported that people with young children worried that they would be killed. Mental exhaustion, worrying, loss of appetite, being startled by vehicles noises, stress, frustration, hopelessness towards life and responsibilities, disorientation and absent mindedness, disturbances in memory, restlessness, tingling sensations, insomnia, irritation, and disproportionate elation were the most common problems. The respondents reported that the victims felt hopeless and were in mental shock due to the loss of loved ones in the earthquake. Students were not able to concentrate after losing their siblings. During the time of the assessment, many had already discontinued their studies.

"The young kids have also been greatly affected the earthquake…When we sit on our beds, they become afraid that a quake is happening everytime someone moves the bed a little bit. Very young kids have these sorts of effects. There have also been problems with forgetting things quickly."

- FGD-Youth Group, Nuwakot

The respondents reported that the loss of near and dear ones had given rise to suicidal thoughts. Women who had lost their sons and husbands often expressed their wish to die as well. They were worried about who would take care of them and how they would survive. Participants in focus groups talked about some community members who had committed suicide, and others who had attempted suicide more than once. Disabilities following the earthquake also made people contemplate suicide. One of the youth FGD members from Rasuwa talked about a man who was behaving strangely after the earthquake, wandering around naked and threatening and shouting at people; the man was aware that his behavior was unusual, and had said that suicide might be better than behaving this way.

"She was from Bhorle VDC, Ward no. 1. Her granddaughter died in the earthquake. The woman hung herself after lamenting that the person who took care of her had died."

- FGD-Women Right Group, Rasuwa

"A boy who had recently started class 10 was buried in the rubble. He could not be rescued in time, he was buried under the earth, and only his face was visible. Maybe if he had been taken out in time, his lower body would still be functioning. Later, he was taken to hospital, and he is now paralyzed. The boy has attempted suicide twice."

- FGD-Teachers, Nuwakot

During the community consultative meeting district stakeholders in Rasuwa said that even though the data showed higher reports suicidal thoughts in Yarsa VDC, in their experience the incidence of suicide was actually much higher in other VDCs.

The earthquake widely disrupted the daily activities of the people in the quake-affected districts. People had difficulty falling sleep. They frequently felt startled *(jhaskine)* and were not able to go to work. Children were reluctant to go to school due to the fear of earthquakes reoccurring. People discontinued their agricultural work and other occupations.

"After the earthquake, we stopped farming. We weren't even sure if we would live or die, there seemed to be no reason to grow crops. Mentally, we weren't in the right frame of mind to do a lot of the work."

- KII-Farmer, 60, Nuwakot

Some counseling services had been provided to the people in the quake-hit districts.

"The students who were reluctant to go to their schools for the fear of being trapped if buildings collapsed again were immediately provided with counseling support through their teachers and counselors, this reduced the problem and finally the students began going to study."

- KII-Health Personnel, 34, Makwanpur

MHPSS problems 18 months after the earthquake

Worry, insomnia (difficulty sleeping), getting scared *(tarsine)*, feeling startled *(jhaskine)*, anxiety, and fainting attacks were common problems still ongoing in the districts at the time of the assessment. One of the respondent health workers reported that people in the community were suffering mental illnesses like depression. They were afraid that a quake would hit again and kill people and destroy homes. Consequently, they had trouble sleeping at night.

"Clients with insomnia come to me, I had a similar case today too – a 17 or 18 year old girl. Hers is a case of anxiety and depression. She has mild gastritis. The girl is mentally depressed and does not sleep at nights. At 8 pm, she goes to her bed, falls asleep only at 3 am, and wakes up again at 5 in the morning. When I asked her what happened, she told me that she is afraid and feels that houses will be destroyed, the earth will shake again. Every month about 3-4 cases with this sort of problem come to us."

- KII-Health Worker, 27, Rasuwa

Children were heavily affected. There was impairment in the level of their mental alertness, concentration and memory. Meanwhile, adults were most worried about how to rebuild their houses.

"The earthquake has resulted in passivity and learning difficulties in school children. They are not able to grasp and remember what they are being taught."

- FGD-Teachers, Nuwakot

During the community consultative meeting, stakeholders in Nuwakot reported that the preliminary results were true to their experiences. The finding that PTSD and alcohol use problems were more prevalent among males was also supported by the meeting participants, who said that men are under greater stress due to responsibilities to provide for the family.

The earthquake has resulted in depressive feelings and suicidal thoughts that are still common among people in the affected communities.

"After this earthquake, everyone is depressed. Even during minor conflicts they talk about wishing they had also been killed in the quake; they speak of suicidal thoughts, say they will jump into river."

- FGD-Youth Group, Rasuwa

Respondents reported that the intensity of problems was higher among the poorer segment of population. Illiterate and disadvantaged people of communities like the Chepang ethnic group were also reported to be in crisis.

"The group of poorer people who even lacked food to eat was in a lot of trouble. The earthquake took their houses along with food items. They now have trouble earning enough to survive, and they are under a lot of mental pressure."

- KII-Journalist, 35, Makwanpur

Populations at risk

Elderly people, women, mothers, young children, and the very poor were greatly affected by the earthquake. A social mobilizer reported often observing elderly members of the community looking into the distance and sitting quietly in isolated areas. They seem edabsent-minded and lost in their own thoughts, and sometimes even talked to themselves. The respondents from Makwanpur said that single mothers were particularly troubled as they did not have economic support and had to shoulder all household responsibilities. After the earthquake, everybody had to stay outside; this caused a big problem for women, as they faced risks sleeping in open spaces. A teacher from Nuwakot reported higher instances of violence against women. Alcohol use was reported to have been particularly problematic after the earthquake; often, women were stressed and lived in fear due to their husbands' chronic alcoholism.

"These days, many husbands live abroad and only the wives with their young children are at home worrying how to manage now that houses have been destroyed, how to send their children to school, how to fulfill their responsibilities as mothers. The mothers are economically and mentally stressed and scared."

- KII-Cooperative Coordinator, 41, Makwanpur

The respondents reported that children discontinued their schooling because their school buildings were destroyed. Reconstruction was not complete, and they still fear another earthquake and have not returned to school.

"After the earthquake children completely stopped studying. The school buildings were not in good condition, they were at risk of falling. The children left school after the earthquake and they have not yet been able to return. Many students mentally affected by the earthquake could not receive counseling services, they still keep blabbering and muttering. Their mental status is affected badly, and they are not capable of carrying out routine daily activities."

- KII-Journalist, 35, Makwanpur

Coping strategies

Self-coping

At an individual level, visiting temples, worshipping gods, chanting mantras, engaging in agricultural work, listening to music, watching TV, practicing yoga, reading books, and talking about problems with trusted friends and family were commonly reported positive coping strategies. Unlike the constructive strategies, some respondents reported that they preferred drinking alcohol in order to cope with the loneliness resulting from the loss of loved ones. Alcoholism is on rise following the earthquake. Respondents from Makwanpur also reported gambling and smoking cigarettes as coping strategies to forget stress. While men drank more, many women also reported drinking alcohol.

"I say that after the earthquake alcoholism has been on the rise. This is because the earthquake took away some people's wives, some people's husbands, and some people's children. Some people have lost their guardians. The loss of their near and dear ones has resulted in loneliness, hence they use alcohol to cope with loneliness."

- KII-Health Personnel, 27, Rasuwa

Marijuana (Cannabis) was also reported to have been in use as a coping mechanism.

"When stressed or worried community people gamble, they put cannabis in cigarettes and smoke."

- KII-Ward Citizen Forum Coordinator, 35, Nuwakot

In all three districts, community members talked about how drinking alcohol was a part of traditional life in rural areas, making it difficult to prevent or control.

Community support systems

The respondents mentioned gathering together in public places, participating in cooperatives, helping and motivating one another, religious group practices *(sabha-saptaha)*, and being involved in group plays as coping strategies to normalize the situation and dispel worries.

"After the earthquake, people began gathering in one place, sitting together around the fire, talking, sharing stories of joys and sorrows, worries and stresses with the group. It brought both the rich and the poor together in a society that usually had discrimination and division."
- FGD-Male Adults, Makwanpur

Available resources

Informal (traditional and religious)

Traditional healers and religious leaders were the most commonly reported resource and support system available in all the assessment districts. The respondents reported that Christians go to church, Buddhists to lamas, and Hindus to *dhamijhakris*. Historically people in the villages have gone to traditional healers for many health issues, both physical and problems relating to the heart and mind. Even today, they rarely go to health facilities. The first preference remains traditional practices, especially in remote areas.

"Traditional healers (dhamijhakri) are the first point of contact. At first, people are reluctant to go anywhere except to dhamijhakris. When the dhamijhakris cannot treat them, then only they finally go to Kathmandu. Even in Kathmandu, it's only after doing all kinds of other physical checkups that they will go to mental health personnel."

- KII-Mental Health Counselor, 33, Rasuwa

District stakeholders in consultative meetings agreed that traditional healers were an integral part of the treatment system in the community as they were usually people's first point of contact.

Formal health services
Health posts and psychosocial counseling services run by some non-government organizations were the formal resources available at the local level. People usually only visit such facilities after traditional healing methods fail to work.

Respondents from all three districts reported that generally the VDC health post workers try to manage MHPS issues at the community level. When this is not successful, the health workers refer cases to the nearest district center or city hospital for further management. When cases are too severe for these hospitals to deal with, they are again referred to the capital, Kathmandu. The health workers said that in some instances they have had to educate patients, informing them that their problems could not be treated by traditional healers and that that they needed to visit mental hospitals. Participants reported that there is a monthly mental health camp in Nuwakot district hospital but clients have to pay for treatment (i.e. for medication) so this not helpful for people who are unable to pay.

"Here, people with heart-mind problems first visit traditional healers and when it does not work, they go to the health post and take general medication from the health facilities. When it does not improve even with medications from the health posts, they are sent to Batar. If they do not recover even in Batar, they are referred to Kathmandu."

- KII-FCHV, 50, Nuwakot

Resources available during the earthquake, post-earthquake, and now
The assessment participants reported that after the earthquake communities were provided with health camps and a number of trainings by different organizations. In Makwanpur, NGO work on psychosocial issues, temporary learning centers for children, first aid training and clothes distributions for pregnant women were a few of the resources available after the earthquake.

"In this regard, different trainings were provided to the community people after the earthquake to enhance livelihoods, divert sick people's minds, engage them in some sort of work, and reduce their pain and worries."

- FGD-Teachers, Nuwakot

At present, counseling trainings and programs are being provided by some organizations in Rasuwa.

"We are now giving trainings to prescribers at the health posts, PSCs, nurses, ANMs. In many places, this counseling service is doing great, with a number of service users. But in many other places, this service is not being used at all. The training is fruitful in some places, while in some places patients are not being provided with care. One should firstly have an understanding that this sort of service can be helpful in so and so many ways."

- KII-Mental Health Counselor, 33, Rasuwa

Conclusions and Recommendations

Conclusions

To the best of our knowledge, this is the only multi-site assessment conducted in the second year following the 2015 Nepal earthquake to identify the mental health and psychosocial status and needs of affected communities. The qualitative and quantitative findings of the assessment suggest that the basic needs of communities affected by the earthquake had not been sufficiently addressed even 18 months after the emergency.

A large majority of the assessment participants reported income/livelihood, shelter, and support to deal with distress/tension as their top three persistent needs. Quantitative assessment found elevated estimates for symptoms of depression (39.4%), anxiety (38.4%), PTSD (16.3%), suicidal ideation (21.7%), and alcohol use problems (25.5%). These rates were supported by qualitative results, especially from consultative community meetings. People in both the community meetings and qualitative interviews reported that mental health symptoms are quite common in their communities because of a lack of resources and support systems to deal with such problems. In addition, most participants reported that they are still struggling to fulfill basic needs such as food, drinking water, and toilets. This could be contributing to the high rates of mental health and psychosocial problems reported.

The rates of depression symptoms, anxiety symptoms, and alcohol use problems reported in this assessment are slightly higher than the rates found among the earthquake-affected population four months after the earthquake (Kane et al., 2017). The rates of PTSD symptoms and suicide ideation are significantly higher in this assessment. Similarly, the rates are higher than WHO estimates for mild to moderate depression and anxiety in the 12 months following a humanitarian emergency (WHO/UNHCR, 2012). These rates are also higher when compared to previous studies with earthquake-affected populations in Haiti (Cerdá et al., 2013) and Japan (Sakuma et al., 2015). These rates are comparable with the rates that were found among conflict-affected populations in Nepal. The rates of depression were reported to be between 28-40% and anxiety 23-48% in those contexts (Kohrt et al., 2012; Luitel et al., 2013). However, these rates were significantly lower than the rates found among displaced Nepali populations (80% depression and 80% anxiety) during the conflict (Thapa & Hauff, 2005).

We found that symptom rates of mental health and psychosocial problems were higher among women, the widowed, divorced, or separated, and residents of Rasuwa and Makwanpur districts. Members of Janajati groups that were not the predominant Janajati ethnic group in the local demographic context (including Chepang, Magar, Newar, and Tharu) also had significantly higher symptom rates. The finding that, as a group, respondents from households previously identified as "most vulnerable" under the Red Cross program reported higher rates of depression, anxiety, PTSD, and suicidal thoughts than the general earthquake-affected community suggests that the *Utthan* program assumption that these households are more likely to experience multiple barriers to recovery than other earthquake-affected households is correct, and provides some independent corroboration of the utility of the vulnerability assessment tool. Alcohol use problems were very high among males, members of the Rai ethnic group, and members from households that did not meet the vulnerability criteria. Contrary to common beliefs about

alcoholism and its relationship with poverty and vulnerability, houses that were in the "most vulnerable" category actually had less alcohol use than in the other households. Qualitative results from FGDs, KIIs, and consultative meetings confirmed these quantitative findings.

A number of significant associations between independent variables were found with the outcomes of depression symptoms, anxiety symptoms, PTSD symptoms, and alcohol use problems after adjusting for the effect of socio-demographics, functioning, and perceived needs. Women were 1.96 to 4.27 times more likely than men to have depression, anxiety, and PTSD. This finding was also supported by the qualitative results where women were reported to be one of the groups at highest risk for mental health and psychosocial problems. These results are consistent with previous studies conducted in Nepal (Luitel et al., 2013; Kohrt et al., 2012; Thapa & Hauff, 2005; Tol, 2007) and other post-conflict settings (Murthy et al., 2006; Cardozo et al., 2004; Roberts et al., 2008) where women endured high symptoms of depression, anxiety, and PTSD. Advanced age was also found to be a risk factor for depression symptoms, anxiety symptoms, and alcohol use problems, which is also consistent with a previous study (Luitel et al., 2013).

Compared to people who are illiterate, respondents with a primary level education were less likely to have symptoms of depression, anxiety, and PTSD. Those with an education of higher secondary level or above also reported less alcohol use problems. Respondents with disabled family members were also 2.39 to 5.65 times more likely than those without to have symptoms of depression, anxiety, and PTSD.

Other variables associated with psychosocial and mental health outcomes were marital status, caste/ethnicity, type of vulnerability, district of residence, religion, and perceived basic needs and functioning. In contrast to previous studies, married or widowed/separated respondents were less likely to have depression symptoms. Similarly, working

as a daily wage laborer was also found to be a protective factor for both depression and anxiety symptoms. Respondents who reported greater perceived needs are 1.11 to 1.21 times more likely to have symptoms of depression, anxiety, and PTSD than those who reported fewer perceived needs. Finally, functioning impairment was also significantly associated with the presence of mental health symptoms.

Aside from monthly mental health camps in Nuwakot, there were no specialized mental health services that were currently available across all the assessed communities. Traditional healers and religious leaders were the first point of contact for people with mental health problems. This is consistent with the findings from the needs assessment study conducted four months after the earthquake in three other earthquake-affected districts (TPO Nepal, 2016). Due to a lack of and unequal distribution of mental health resources in the country, mental health services are limited to a few hospitals located in the larger cities (Luitel et al., 2015). Results also suggested that many people use positive self-coping strategies to deal with their mental health problems; however, many people also reported used negative self-coping strategies such as heavy drinking and gambling, which was also consistent with a previous assessment (TPO Nepal, 2016).

There are some limitations in this assessment. First, the assessment was conducted in selected areas of three earthquake-affected districts, but due to the diverse ethnic and cultural composition in Nepal the results of this assessment may not be representative of the entire districts or of all earthquake-affected communities in Nepal. Second, earthquake-specific idioms of distress or specific mental health symptoms linked directly to the earthquakes were not assessed quantitatively. Third, we used Nepali language questionnaires and Nepali speaking interviews (except for a few in Tamang) for the assessment. Language could be a barrier in identifying problems in certain communities where Nepali is not the first language. Fourth, due to a lack of baseline data we cannot conclude that the

high rates of mental health symptoms were due to the earthquakes. Finally, the assessment relied on self-reports, which has been shown to predict inflated rates of mental health problems (Steel et al., 2009).

In summary, this assessment indicated high rates of psychosocial and mental health symptoms among a considerable proportion of the population affected by the earthquakes. A scarcity of mental health services within the existing health care system to address these high rates of mental health symptoms is challenging. Integration of mental health services into the existing health care system could be an effective and sustainable approach to provide mental health services to populations reporting psychosocial and mental health symptoms.

Recommendations

The earthquake-affected populations in Rasuwa, Nuwakot, and Makwanpur showed elevated estimates for symptoms of depression (39.4%), anxiety (38.4%), PTSD (16.3%), suicidal ideation (21.7%), and alcohol use problems (25.5%) when assessed 18 months after the April 2015 earthquake. Given the extent of these symptoms found during this assessment, it is crucial to establish mental health and psychosocial (MHPS) support systems for a full recovery. Based on the findings, the following key recommendations have been made to support the psychosocial well being of people in the Red Cross *Utthan* earthquake recovery program areas, as well as in other communities that continue to deal with the impact of the earthquake.

Key recommendations for the Red Cross *Utthan* program

- *Addressing distress as a core priority:* Communities in all three districts reported income/livelihoods, shelter, and support to cope with distress/tension as the three top priority needs for immediate attention. The Inter Agency Standing Committee (IASC) guidelines on mental health and psychosocial support strongly recommend working intensively to fulfill the basic needs of communities to prevent the development of psychological distress after an acute emergency (IASC, 2007). It is essential that

the Red Cross continue work to provide livelihoods opportunities and shelter as key components of earthquake recovery, as addressing these needs will often help significantly reduce the mental and emotional burden on households. It is also crucial to address mental health as a basic need in itself, to enable individuals and families to more fully participate in other aspects of recovery (such as shelter reconstruction and resuming productive livelihoods activities), and develop programmatic approaches for MHPS support systems in earthquake-affected communities, as well as ensure that MHPS needs are a crosscutting consideration with work in other sectors.

- *Focusing support for at-risk populations:* The assessment showed significantly higher mental health and psychosocial symptoms among women, the elderly, households already identified as highly vulnerable, and minority communities including the Chepangs. Immediate implementation of robust MHPS support programs focusing on these groups is recommended. This will require significantly more training and capacity than the NRCS social mobilizers have currently (see below).

- *Utilizing existing program structures for MHPS support:* The *Utthan* program's livelihoods beneficiaries were all selected using the "most vulnerable" criteria. As assessment respondents who were part of this "most vulnerable" group showed higher rates of MHPS symptoms, a significant number of livelihoods beneficiaries may require individual and/or family psychosocial services to facilitate recovery from the earthquake and optimize the support received through the program. The livelihoods support groups created in the *Utthan* program provide an excellent opportunity to work with highly vulnerable individuals in a group setting, and offer sessions directed at enhancing social cohesion, strengthening trust and a sense of community belonging to improve team work and mutual support.

- *Mobilizing the strength of the NRCS network:* The Nepal Red Cross Society

is implementing earthquake recovery programs across all 14 earthquake-affected districts and has a strong network at the community level. However, at the time of writing, MHPS work has been limited to social mobilizers receiving a three-day orientation on psychosocial issues. To deal effectively with the high prevalence of MHPS issues indicated by this assessment, the skills of social mobilizers and selected volunteers need to be upgraded with the 20-day Community Psychosocial Worker (CPSW) training to help provide community-based MHPS activities.

•   *Tracking changes in status and need:* Many participants in the consultative stakeholder meetings said that it would be helpful if current findings could be measured against baseline comparison data. However, as this was the first MHPS assessment conducted in these three districts, such comparisons could not be made. As this assessment data has now been collected, this is a good opportunity to use this as a baseline and conduct additional assessments in the future to determine the impact of the interventions and potential changes in mental health and psychosocial outcomes.

Additional recommendations for MHPS support in earthquake-affected communities

•   Traditional healers or religious leaders are often the first point of contact in seeking any kind of psychosocial support in the community. Training traditional healers on basic mental health and psychosocial symptom identification and to conduct referrals to other formal mental health services is recommended. TPO Nepal has practiced this model in other districts of Nepal with great success (Jordans et al., 2015).

•   Psychosocial and mental health problems are highly associated with stigma and discrimination. Community based programs should involve community leaders, teachers, local political representatives, health management committees, school management committees, and para legal committees for mental health and psychosocial promotion. This would create an enabling environment for psychosocial service provisions in the community.

•   The government Women and Children Offices established counseling centers in many earthquake-affected districts and there is a provision for the recruitment of psychosocial counselors in each center. There is also a provision for specialized care through monthly mobile camps from mental health hospital psychiatrists in Nuwakot district hospital. Proper co-ordination in order to strengthen the referral mechanisms for people with mental health and psychosocial problems in counseling centers or hospitals with available resources is recommended.

•   Conducting school-based awareness programs for adolescent girls and boys on mental health and psychosocial support using existing IEC materials, reading materials, and brochures is recommended.

Recommendations for national level and long term intervention

•   Mental health and psychosocial support services is one of the most neglected fields in Nepal. Designated focal units with assigned staff are yet to be established in the Ministry of Health (MoH). Therefore, continued lobbying and advocacy at the government level for the establishment of a mental health focal unit either in the MoH or the Department of Health Services is essential.

•   The fact that around 90% of people with mental health and psychosocial problems receive no treatment and services in Nepal (Luitel et al., forthcoming) reflects how extensively this sector has been overlooked. Therefore, it is highly recommended that mental health and psychosocial support services be integrated into the existing government health care delivery and protection system.

   ▪   Implement community-based mental health and psychosocial programs based on the mhGAP action program

and Standard Treatment Protocol (STP) developed by the Ministry of Health to enhance the capacity of health workers through training and intensive mentoring (in order to diagnose mental health problems, prescribe psychotropic medication, and ensure basic psychosocial counseling support), for primary level treatment, care, and referral for those with severe mental health problems.

- Provide skill-based training and mentoring to social workers and volunteers for basic emotional support.

- Develop functional referral protocols between health, protection, and other relevant service systems in the community.

• Mental health and psychosocial support is not only crucial to health; it is important to recognize the way these issues are connected with education, livelihood, social security, and other services and the need for these sectors to be involved in mental health care and referrals. Therefore, coordination with the National Mental Health Network, I/NGOs, and UN agencies for the establishment of referral system is recommended.

• The Ministry of Health (MoH) recently reviewed the medications available for mental health in their system. There are now 11 psychotropic drugs on the essential drug list. Ongoing lobbying to ensure the availability of those medications is recommended.

• Develop effective and systematic supervision protocols for trained health and protection workers to ensure the quality of services they provide.

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